



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,132	06/16/2005	Klaus Schultes	272480US0PCT	2289
22850	7590	10/06/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER REDDY, KARUNA P	
			ART UNIT	PAPER NUMBER
			1796	
			NOTIFICATION DATE	DELIVERY MODE
			10/06/2008	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/539,132	<b>Applicant(s)</b> SCHULTES ET AL.	
	<b>Examiner</b> KARUNA P. REDDY	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 18-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 18-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/17/2008</u> .   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on 9/17/2008 has been entered. Claims 1-17 are cancelled; and claim 18 is amended. Accordingly, claims 18-38 are currently pending in the application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 19 recites "aqueous dispersion is prepared which comprises less than 5.0, based on its total weight." Neither the nature of component present in "less than 5.0, based on total weight", nor the units required (for e.g. weight% or mole%) to define the amount is recited.

5. Claim 32 recites the limitation "The moulding composition according to claim 29" in line 1. There is insufficient antecedent basis for this limitation in the claim, because claim 29 is directed to a core-shell particle and not a moulding composition. It appears that claim 32 should be dependent on claim 30. Appropriate clarification and correction is required.
6. Claim 24 recites the limitation "said alkyl alcohol having from 12 to 20 carbon atoms in the alkyl radical" in line 1. There is insufficient antecedent basis for this limitation in the claim because claim 18 on which this claim depends, recites "long chain alcohol" and not "long chain alkyl alcohol."

***Claim Rejections - 35 USC § 103***

7. Claims 18, 20-23, 25-31 and 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (US 4, 180, 529) in view of DeWitt (US 4, 173, 596).

Hofmann discloses a multistage, sequential process for making an acrylic graft copolymer. Upon blending with a non-resilient methacrylic matrix resin, followed by molding, an impact resistant molded product is obtained (abstract).

See example 8 for the process of making a four stage resin, where initial charge comprises 20,000 g of water and 3.6 g of SDOSS (sodium dioctyl sulfosuccinate) an emulsifier (read on wt% of emulsifier and water in claim 20). The proportion of monomers in stage 2 (2820 g MMA, 180 g EA and 12 g ALMA), stage 3 (4863 g BA, 1110 g S, and 110 g ALMA), and stage 4 (2256 g MMA and 144 g EA) read on the proportions of monomers in stage 1, 2 and 3 respectively of claim 18.  $K_2S_2O_8$  i.e.

Art Unit: 1796

potassium peroxydisulphate (KPS) in demineralized water was added to initiate polymerization reaction. The monomer mixture in stages 3 and 4 (equivalent of stages 2 and 3 of present claims) is metered in over a period of several minutes. The first stage is used as a seed or core around which either more of the first stage or subsequent stages are polymerized in layers (column 2, lines 57-60).

Generally, the final particle size should be preferably between about 0.15 to 0.35 microns i.e. 150 to 250 nm (column 2, line 68, column 3, line 1). A blend of 20 lbs. of graft polymer (i.e. core-shell polymer particle) and 30 lbs. of Lucite® 47F (MMA/EA; 94/6) was prepared and the blend was extruded in a twin screw extruder (column 10, lines 18-20).

Hofmann differs with respect to initial charge which is an emulsion of a seed latex whose particle radius is 3.0 to 20 nm; total weight of components A-J, based on total weight of aqueous dispersion; and properties of molded product.

However, DeWitt teaches improved impact modifiers prepared by emulsion polymerization in the presence of seed latex. (column 2, lines 66-68). Latex is initially provided wherein polymer particles are dispersed in an aqueous medium. These polymer particles have an average size range of from about 200 to about 2,000 Å units (column 3, lines 59-62) i.e. 20 to 200 nm. Therefore, it would have been obvious to continue the polymerization of first stage, in Hofmann, until a seed polymer with a particle size of 20 nm to 200 nm (i.e. radius of 10 nm to 100 nm) is obtained because DeWitt teaches using seed latex having a particle size of 20 to 200 nm to obtain a core-shell polymer particle that provides improved impact strength.

With respect to total weight of components A-J, the proportion of monomers in examples of Hofmann read on the proportion of components A-J of instant invention.

Art Unit: 1796

The amount of solvent i.e. water used to form emulsion or dispersion is within the scope of a skilled artisan and can be varied depending on the desired solids content and end use requirements, absent evidence of unexpected results.

As to the properties of claim 35-37, in light of the fact that prior art teaches / discloses essentially the same molding composition made by a similar process as that of the claimed, one of ordinary skill in the art would have a reasonable basis to believe that the molding composition of prior art would exhibit essentially the same property(ies) under similar test conditions. Since PTO cannot conduct experiments, the burden of proof is shifted to the applicants to establish an unobviousness difference. See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977).

8. Claims 18, 20-21, 25-31 and 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (US 4, 180, 529) in view of Takarabe et al (US 4, 914, 142).

Hofmann discloses a multistage, sequential process for making an acrylic graft copolymer. Upon blending with a non-resilient methacrylic matrix resin, followed by molding, an impact resistant molded product is obtained (abstract).

See example 8 for the process of making a four stage resin, where initial charge comprises 20,000 g of water and 3.6 g of SDOSS (sodium dioctyl sulfosuccinate) an emulsifier (read on wt% of emulsifier and water in claim 20). The proportion of monomers in stage 2 (2820 g MMA, 180 g EA and 12 g ALMA), stage 3 (4863 g BA, 1110 g S, and 110 g ALMA), and stage 4 (2256 g MMA and 144 g EA) read on the proportions of monomers in stage 1, 2 and 3 respectively of claim 18.  $K_2S_2O_8$  i.e. potassium peroxodisulphate (KPS) in demineralized water was added to initiate polymerization reaction. The monomer mixture in stages 3 and 4 (equivalent of stages 2

Art Unit: 1796

and 3 of present claims) is metered in over a period of several minutes. The first stage is used as a seed or core around which either more of the first stage or subsequent stages are polymerized in layers (column 2, lines 57-60).

Generally, the final particle size should be preferably between about 0.15 to 0.35 microns i.e. 150 to 250 nm (column 2, line 68, column 3, line 1). A blend of 20 lbs. of graft polymer (i.e. core-shell polymer particle) and 30 lbs. of Lucite® 47F (MMA/EA; 94/6) was prepared and the blend was extruded in a twin screw extruder (column 10, lines 18-20).

Hofmann is silent with respect to initial charge of an aqueous emulsion of a long chain alcohol; total weight of components A-J, based on total weight of aqueous dispersion; and properties of molded product.

However, Takarabe et al teach a method by which a highly monodisperse emulsion polymer can be produced while the occurrence of a coagulum or new particles during the polymerization is inhibited to a low level (column 2, lines 30-36). The object is achieved by adding a polymerizable monomer to an emulsion polymer containing a high-molecular weight compound as a seed polymer and thereafter, polymerizing the monomer in presence of a film forming aid (column 2, lines 37-46). Typical examples of the film-forming aid include ethylene glycol, isopropyl benzyl alcohol and alkyl-substituted glycols having 3 to 8 carbon atoms (column 3, lines 24-46). Therefore, it would have been obvious at the time invention was made to add film forming aid such as alcohol to the initial charge of Hofmann to obtain a highly monodisperse emulsion comprising core-shell polymer particle while maintaining coagulum or new particle formation at a low level.

Art Unit: 1796

With respect to total weight of components A-J, the proportion of monomers in examples of Hofmann read on the proportion of components A-J of instant invention. The amount of solvent i.e. water used to form emulsion or dispersion is within the scope of a skilled artisan and can be varied depending on the desired solids content and end use requirements, absent evidence of unexpected results.

As to the properties of claim 35-37, in light of the fact that prior art teaches / discloses essentially the same molding composition made by a similar process as that of the claimed, one of ordinary skill in the art would have a reasonable basis to believe that the molding composition of prior art would exhibit essentially the same property(ies) under similar test conditions. Since PTO cannot conduct experiments, the burden of proof is shifted to the applicants to establish an unobviousness difference. See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977).

9. Claims 18, 20-21, 24-31 and 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (US 4, 180, 529) in view of Morningstar et al (US 4, 371, 677).

Hofmann discloses a multistage, sequential process for making an acrylic graft copolymer. Upon blending with a non-resilient methacrylic matrix resin, followed by molding, an impact resistant molded product is obtained (abstract).

See example 8 for the process of making a four stage resin, where initial charge comprises 20,000 g of water and 3.6 g of SDOSS (sodium dioctyl sulfosuccinate) an emulsifier (read on wt% of emulsifier and water in claim 20). The proportion of monomers in stage 2 (2820 g MMA, 180 g EA and 12 g ALMA), stage 3 (4863 g BA, 1110 g S, and 110 g ALMA), and stage 4 (2256 g MMA and 144 g EA) read on the



Art Unit: 1796

proportions of monomers in stage 1, 2 and 3 respectively of claim 18.  $K_2S_2O_8$  i.e. potassium peroxydisulphate (KPS) in demineralized water was added to initiate polymerization reaction. The monomer mixture in stages 3 and 4 (equivalent of stages 2 and 3 of present claims) is metered in over a period of several minutes. The first stage is used as a seed or core around which either more of the first stage or subsequent stages are polymerized in layers (column 2, lines 57-60).

Generally, the final particle size should be preferably between about 0.15 to 0.35 microns i.e. 150 to 250 nm (column 2, line 68, column 3, line 1). A blend of 20 lbs. of graft polymer (i.e. core-shell polymer particle) and 30 lbs. of Lucite® 47F (MMA/EA; 94/6) was prepared and the blend was extruded in a twin screw extruder (column 10, lines 18-20).

Hofmann is silent with respect to initial charge of an aqueous emulsion of a long chain alcohol; total weight of components A-J, based on total weight of aqueous dispersion; and properties of molded product.

However, Morningstar et al disclose a process for making dispersion copolymers (abstract). The addition of long straight chain saturated alcohol, containing from 8 to 24 carbon atoms, in the emulsifier system increases colloidal stability of the polymerization and reduces the amount of coagulum in the copolymer latex. Examples of such alcohols include dodecanol, tridecanol, tetradecanol, docosanol etc. (column 3, lines 28-40). Therefore, it would have been obvious to add long straight chain saturated alcohol containing from 12 to 22 carbon atoms to the initial charge of Hofmann for reducing the amount of coagulum in the copolymer latex.

With respect to total weight of components A-J, the proportion of monomers in examples of Hofmann read on the proportion of components A-J of instant invention.

Art Unit: 1796

The amount of solvent i.e. water used to form emulsion or dispersion is within the scope of a skilled artisan and can be varied depending on the desired solids content and end use requirements, absent evidence of unexpected results.

As to the properties of claim 35-37, in light of the fact that prior art teaches / discloses essentially the same molding composition made by a similar process as that of the claimed, one of ordinary skill in the art would have a reasonable basis to believe that the molding composition of prior art would exhibit essentially the same property(ies) under similar test conditions. Since PTO cannot conduct experiments, the burden of proof is shifted to the applicants to establish an unobviousness difference. See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977).

10. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (US 4, 180, 529) in view of DeWitt (US 4, 173, 596) as applied to claim 30 above, and further in view of Falk et al (US 4, 542, 179).

It is noted that claim 32 is interpreted, by the examiner, to depend from claim 30 instead of claim 29, because of reference to the moulding composition instead of core-shell particle.

The discussion with respect to Hofmann in view of DeWitt in paragraph 7 above is incorporated here by reference.

Hofmann in view of DeWitt is silent with respect to the use of styrene-acrylonitrile in the molding composition.

However, Falk et al teach that addition of styrene-acrylonitrile copolymer to acrylic core-shell polymers reduces mold shrinkage and improves surface hardness. The styrene-acrylonitrile copolymer resins useful in the practice of this invention are

Art Unit: 1796

copolymers of styrene and acrylonitrile comprising from 50 to 90% by weight of styrene and 10 to 50% by weight of acrylonitrile. Therefore, it would have been obvious to one skilled in the art at the time invention was made to add styrene-acrylonitrile copolymers to the molding composition containing core-shell polymers of Hofmann in view of DeWitt, and obtain a mold with reduced shrinkage and improved surface hardness.

11. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (US 4, 180, 529) in view of DeWitt (US 4, 173, 596) as applied to claim 30 above, and further in view of Shah et al (US 5, 777, 034).

The discussion with respect to Hofmann in view of DeWitt in paragraph 7 above is incorporated here by reference.

Hofmann in view of DeWitt is silent with respect to the molding composition comprising 0.1 to 10.0% by weight of another polymer with a molecular weight higher by at least 10% than that of (meth)acrylic polymer.

However, Shah et al teach a methacrylate resin blend composition having improved solvent craze resistance. The improvement is achieved in a simple way while retaining the blend composition's desirable properties such as weather resistance, molding, impact resistance and mechanical properties (column 1, lines 1-10). The blend composition contains a methacrylate matrix resin, particles of a single layer polymer and optionally an acrylic multi-layer polymer. The particles of a single layer polymer have a weight average molecular weight of at least 120% of the  $M_w$  of the methacrylate matrix resin component (abstract). The simple incorporation of SLP's (single layer polymer) into the methacrylate matrix resin provides the improvement in craze resistance (column 4, line 67; column 5, lines 1-3). The matrix resin will comprise 50 to 90 wt%, the impact

Art Unit: 1796

modifier resin from 0 to 50 wt% and the single layer polymer from 1 to 50 wt% of the blend composition (column 6, lines 42-45). Therefore, it would have been obvious to one skilled in the art at the time invention was made to add a polymer having a molecular weight of at least 120% of the  $M_w$  of methacrylate resin of Hofmann in view of DeWitt, in an amount of from 1 to 50 wt% and obtain a molding composition that will exhibit improved solvent craze resistance.

12. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (US 4, 180, 529) in view of Takarabe et al (US 4, 914, 142) as applied to claim 30 above, and further in view of Falk et al (US 4, 542, 179).

It is noted that claim 32 is interpreted, by the examiner, to depend from claim 30 instead of claim 29, because of reference to the moulding composition instead of core-shell particle.

The discussion with respect to Hofmann in view of Takarabe et al in paragraph 8 above is incorporated here by reference.

Hofmann in view of Takarabe et al is silent with respect to the use of styrene-acrylonitrile in the molding composition.

However, Falk et al teach that addition of styrene-acrylonitrile copolymer to acrylic core-shell polymers reduces mold shrinkage and improves surface hardness. The styrene-acrylonitrile copolymer resins useful in the practice of this invention are copolymers of styrene and acrylonitrile comprising from 50 to 90% by weight of styrene and 10 to 50% by weight of acrylonitrile. Therefore, it would have been obvious to one skilled in the art at the time invention was made to add styrene-acrylonitrile copolymers to the molding composition containing core-shell polymers of Hofmann in view of

Art Unit: 1796

Takarabe et al, and obtain a mold with reduced shrinkage and improved surface hardness.

13. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (US 4, 180, 529) in view of Takarabe et al (US 4, 914, 142) as applied to claim 30 above, and further in view of Shah et al (US 5, 777, 034).

The discussion with respect to Hofmann in view of Takarabe et al in paragraph 8 above is incorporated here by reference.

Hofmann in view of Takarabe et al is silent with respect to the molding composition comprising 0.1 to 10.0% by weight of another polymer with a molecular weight higher by at least 10% than that of (meth)acrylic polymer.

However, Shah et al teach a methacrylate resin blend composition having improved solvent craze resistance. The improvement is achieved in a simple way while retaining the blend composition's desirable properties such as weather resistance, molding, impact resistance and mechanical properties (column 1, lines 1-10). The blend composition contains a methacrylate matrix resin, particles of a single layer polymer and optionally an acrylic multi-layer polymer. The particles of a single layer polymer have a weight average molecular weight of at least 120% of the  $M_w$  of the methacrylate matrix resin component (abstract). The simple incorporation of SLP's (single layer polymer) into the methacrylate matrix resin provides the improvement in craze resistance (column 4, line 67; column 5, lines 1-3). The matrix resin will comprise 50 to 90 wt%, the impact modifier resin from 0 to 50 wt% and the single layer polymer from 1 to 50 wt% of the blend composition (column 6, lines 42-45). Therefore, it would have been obvious to one skilled in the art at the time invention was made to add a polymer having a

Art Unit: 1796

molecular weight of at least 120% of the  $M_w$  of methacrylate resin of Hofmann in view of Takarabe et al, in an amount of from 1 to 50 wt% and obtain a molding composition that will exhibit improved solvent craze resistance.

14. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (US 4, 180, 529) in view of Morningstar et al (US 4, 371, 677) as applied to claim 30 above, and further in view of Falk et al (US 4, 542, 179).

It is noted that claim 32 is interpreted, by the examiner, to depend from claim 30 instead of claim 29, because of reference to the moulding composition instead of core-shell particle.

The discussion with respect to Hofmann in view of Morningstar et al in paragraph 9 above is incorporated here by reference.

Hofmann in view of Morningstar et al is silent with respect to the use of styrene-acrylonitrile in the molding composition.

However, Falk et al teach that addition of styrene-acrylonitrile copolymer to acrylic core-shell polymers reduces mold shrinkage and improves surface hardness. The styrene-acrylonitrile copolymer resins useful in the practice of this invention are copolymers of styrene and acrylonitrile comprising from 50 to 90% by weight of styrene and 10 to 50% by weight of acrylonitrile. Therefore, it would have been obvious to one skilled in the art at the time invention was made to add styrene-acrylonitrile copolymers to the molding composition containing core-shell polymers of Hofmann in view of Morningstar et al, and obtain a mold with reduced shrinkage and improved surface hardness.

Art Unit: 1796

15. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hofmann (US 4, 180, 529) in view of Morningstar et al (US 4, 371, 677) as applied to claim 30 above, and further in view of Shah et al (US 5, 777, 034).

The discussion with respect to Hofmann in view of Morningstar et al in paragraph 9 above is incorporated here by reference.

Hofmann in view of Morningstar et al is silent with respect to the molding composition comprising 0.1 to 10.0% by weight of another polymer with a molecular weight higher by at least 10% than that of (meth)acrylic polymer.

However, Shah et al teach a methacrylate resin blend composition having improved solvent craze resistance. The improvement is achieved in a simple way while retaining the blend composition's desirable properties such as weather resistance, molding, impact resistance and mechanical properties (column 1, lines 1-10). The blend composition contains a methacrylate matrix resin, particles of a single layer polymer and optionally an acrylic multi-layer polymer. The particles of a single layer polymer have a weight average molecular weight of at least 120% of the  $M_w$  of the methacrylate matrix resin component (abstract). The simple incorporation of SLP's (single layer polymer) into the methacrylate matrix resin provides the improvement in craze resistance (column 4, line 67; column 5, lines 1-3). The matrix resin will comprise 50 to 90 wt%, the impact modifier resin from 0 to 50 wt% and the single layer polymer from 1 to 50 wt% of the blend composition (column 6, lines 42-45). Therefore, it would have been obvious to one skilled in the art at the time invention was made to add a polymer having a molecular weight of at least 120% of the  $M_w$  of methacrylate resin of Hofmann in view of Morningstar et al, in an amount of from 1 to 50 wt% and obtain a molding composition that will exhibit improved solvent craze resistance.

***Response to Arguments***

16. Applicant's arguments, filed 9/2/2008, with respect to rejection of claims 18-26, 29-31 and 34-38 under 35 U.S.C. 103(a) as being unpatentable over Owens (US 3, 793, 402) in view of Takarabe et al (US 4, 914, 142) and DeWitt (US 4, 173, 596); claim 32 under 35 U.S.C. 103(a) as being unpatentable over Owens (US 3, 793, 402) in view of Takarabe et al (US 4, 914, 142) and DeWitt et al (US 4, 173, 596) as applied to claim 29 above, and further in view of Falk et al (US 4, 542, 179); and claim 33 under 35 U.S.C. 103(a) as being unpatentable over Owens (US 3, 793, 402) in view of Takarabe et al (US 4, 914, 142) and DeWitt (US 4, 173, 596) as applied to claim 30 above, and further in view of Shah et al (US 5, 777, 034), have been fully considered and are persuasive. The rejection of claims 18-26, 29-31 and 34-38 under 35 U.S.C. 103(a) as being unpatentable over Owens (US 3, 793, 402) in view of Takarabe et al (US 4, 914, 142) and DeWitt (US 4, 173, 596); claim 32 under 35 U.S.C. 103(a) as being unpatentable over Owens (US 3, 793, 402) in view of Takarabe et al (US 4, 914, 142) and DeWitt et al (US 4, 173, 596) as applied to claim 29 above, and further in view of Falk et al (US 4, 542, 179); and claim 33 under 35 U.S.C. 103(a) as being unpatentable over Owens (US 3, 793, 402) in view of Takarabe et al (US 4, 914, 142) and DeWitt (US 4, 173, 596) as applied to claim 30 above, and further in view of Shah et al (US 5, 777, 034) has been withdrawn in view of the amendment to independent claim 18 to a core-shell polymer particle having a size of from 150 nm to less than 250 nm.



Art Unit: 1796

17. Applicant's arguments with respect to rejection of claims 18-31 and 34-38 under 35

U.S.C. 103(a) as being unpatentable over Hofmann (US 4, 180, 529) in view of Takarabe et al (US 4, 914, 142) and DeWitt (US 4, 173, 596); claim 32 under 35 U.S.C. 103(a) as being unpatentable over Hofmann (US 4, 180, 529) in view of Takarabe et al (US 4, 914, 142) and DeWitt (US 4, 173, 596) as applied to claim 29 above, and further in view of Falk et al (US 4, 542, 179); claim 33 under 35 U.S.C. 103(a) as being unpatentable over Hofmann (US 4, 180, 529) in view of Takarabe et al (US 4, 914, 142) and DeWitt (US 4, 173, 596) as applied to claim 30 above, and further in view of Shah et al (US 5, 777, 034), have been considered but are moot in view of the new ground(s) of rejection.

While the grounds of rejection are changed, it was still deemed appropriate to address some of the arguments which would be pertinent to new grounds of rejection being cited in this office action (See paragraph 14 below) because of the office policy for compact prosecution.

18. Applicant's arguments, filed 9/2/2008, have been fully considered but they are not

persuasive. Specifically, applicant argues that (A) Hofmann does not disclose polymer seed material that is constituted of latex seed particles of size 3 to 20 nm; (B) Takarabe does not teach a process of forming a core-shell, multilayer (meth)acrylate polymer, wherein the core stage of the multilayer polymer is formed in the presence of a seed latex; (C) DeWitt teaches a seed latex which is made of a hard cross-linked acrylate polymer, whereas the first stage of Hofmann is an elastomeric (resilient) acrylate polymer and thus the reference of Hofmann and DeWitt are not combinable; (D) methodology described in DeWitt is quite different from that disclosed in Hofmann.

Art Unit: 1796

With respect to (A), while examiner agrees that Hofmann does not disclose particle size for the seed latex, DeWitt used in the 103 rejection teaches that a core-shell particle formed in the presence of a seed latex particle having a size ranging from 20 to 200 nm (i.e. a radius of 10 to 100 nm) provides improved impact resistance.

With respect to (B), Takarabe is only used for its teaching that emulsion polymerization in the presence of a seed latex and film forming aid such as alkyl substituted glycol (an alcohol) containing from 3 to 8 carbon atoms, provides highly monodisperse polymer by reducing the formation of coagulum at a low level.

With respect to (C), applicant's attention is drawn to abstract of DeWitt, where it discloses that utilization of "soft" core or seed apparently enhances the efficiency of the toughener in the rigid polymer. Furthermore, DeWitt discloses in column 3, lines 4-5, that the object of their invention is to provide a "soft-seeded" impact modifier.

With respect to (D), DeWitt is only used for its teaching that a multilayer core-shell polymer can be produced in the presence of a seed latex having a particle size of 20 to 200 nm (i.e. radius of 10 to 100 nm) and yield a core-shell particle with improved impact resistance.

As can be seen above, applicant argued against cited references individually, in the response filed 9/2/2008. It is noted that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

### **Conclusion**

Art Unit: 1796

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARUNA P. REDDY whose telephone number is (571)272-6566. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. P. R./  
Examiner, Art Unit 1796

/Vasu Jagannathan/  
Supervisory Patent Examiner, Art Unit 1796